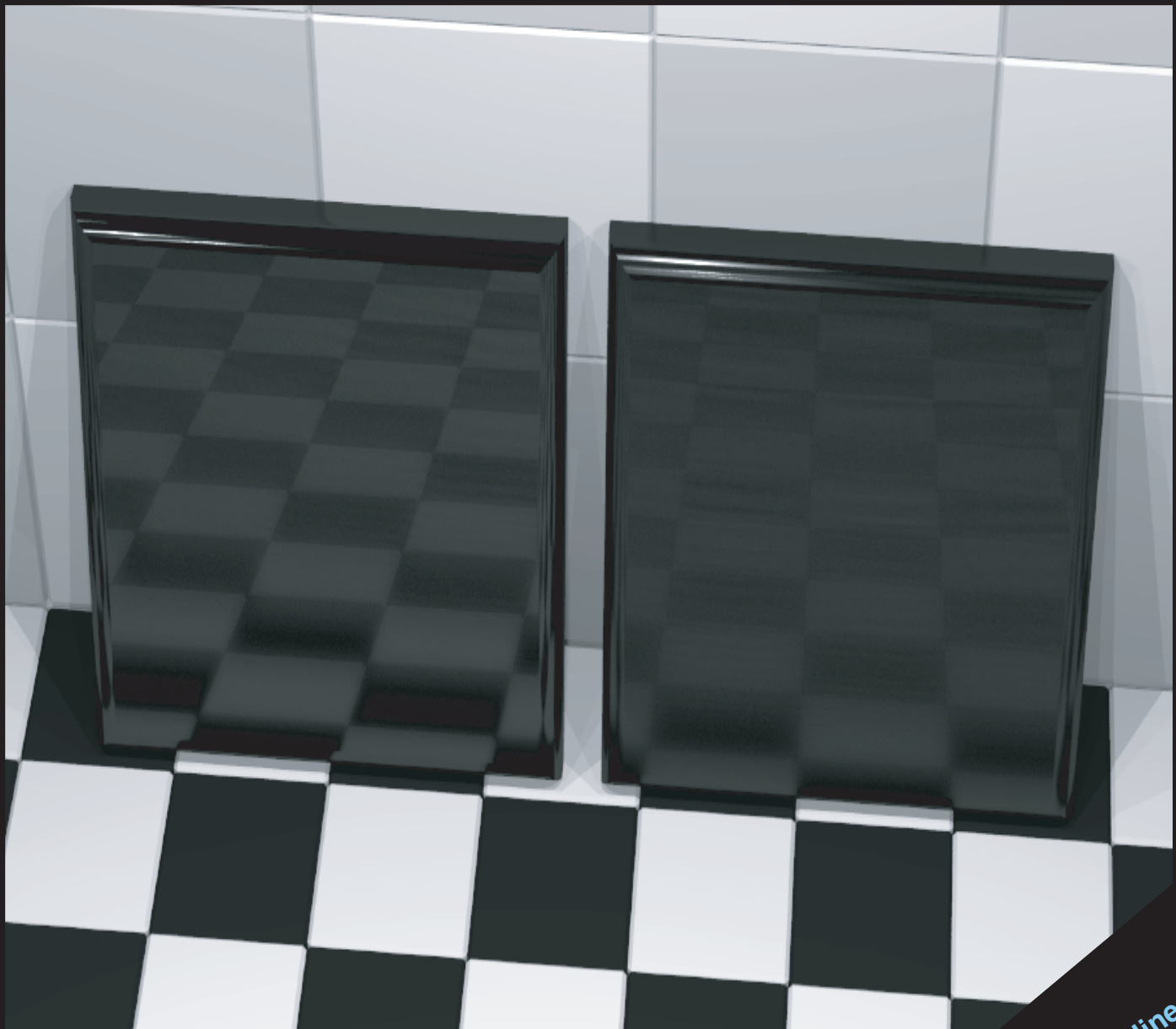


# Journal of Research

of the

# National Institute of Standards and Technology

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## NIST

National Institute of Standards and Technology  
Technology Administration, U.S. Department of Commerce

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- Electromagnetic Technology<sup>1</sup>
- Optoelectronics<sup>1</sup>
- Magnetic Technology<sup>1</sup>

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- Ceramics
- Materials Reliability<sup>1</sup>
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- Structures
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- Fire Research

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- Information Access
- Convergent Information Systems
- Information Services and Computing
- Software Diagnostics and Conformance Testing
- Statistical Engineering

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<sup>1</sup> At Boulder, CO 80303.

<sup>2</sup> Some elements at Boulder, CO.

# ***Journal of Research of the*** **National Institute of** **Standards and Technology**

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**Cover:** The appearance of two black glass tiles leaning against a lighter colored surface is simulated in this computer rendered image. The coating on the surface of each of the tiles is designed to have a predetermined surface roughness—201 nm rms on the left tile and 805 nm rms on the right. The surface coatings were fabricated by researchers in the Organic Materials Division of the Building and Fire Research Laboratory at NIST. The software used to render the tiles is the subject of the article on p. 247. It was designed to make direct use of light scattering data as well as data coming from light scattering models. In the case of the tiles, a model was used, based on measurements of local surface height. Both the measurements and the modelling were performed in the Precision Engineering Division of the Manufacturing Engineering Laboratory. The results from the model were compared with actual light scattering measurements of tiles performed by Maria Nadal of the Optical Technology Division of the Physics Laboratory. Note the glossier appearance of the tile on the left. Cover art arranged by C. Carey.

The *Journal of Research of the National Institute of Standards and Technology*, the flagship periodic publication of the national metrology institute of the United States, features advances in metrology and related fields of physical science, engineering, applied mathematics, statistics, biotechnology, and information technology that reflect the scientific and technical programs of the Institute. The *Journal* publishes papers on instrumentation for making accurate measurements, mathematical models of physical phenomena, including computational models, critical data, calibration techniques, well-characterized reference materials, and quality assurance programs that report the results of current NIST work in these areas. Occasionally, a Special Issue of the *Journal* is devoted to papers on a single topic. Also appearing on occasion are review articles and reports on conferences and workshops sponsored in whole or in part by NIST.

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